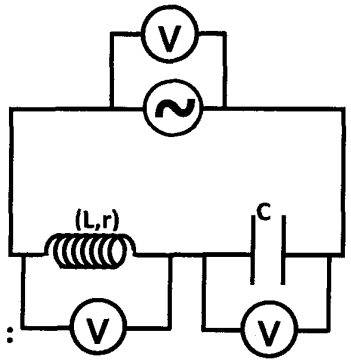
4°)

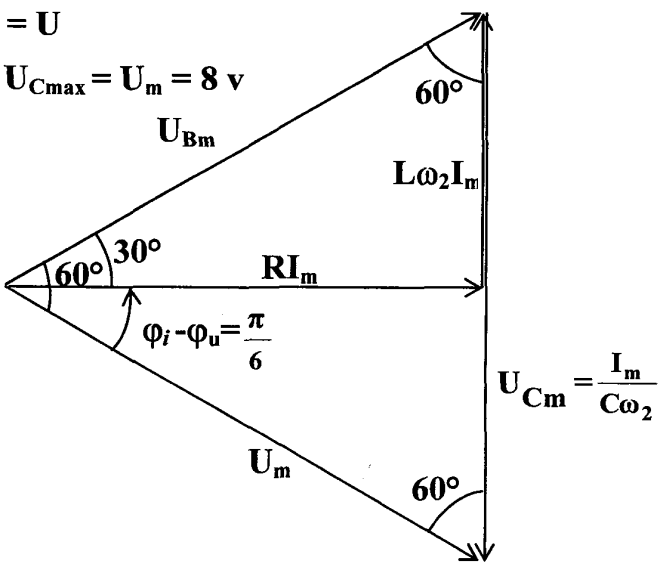
a-



Pour $N = N_2$:

$U_b = U_c = U$

$U_{Lmax} = U_{Cmax} = U_m = 8\ v$



Pour que : $U_b = U_c$; il faut que : $\frac{1}{C\omega} > L\omega$ Circuit capacitif

Autrement : $U_b = U_c \Rightarrow Z_b.I = Z_c.I$

$$\sqrt{r^2 + (L\omega)^2} = \frac{1}{C\omega}$$

$$r^2 + (L\omega)^2 = (\frac{1}{C\omega})^2$$

$(\frac{1}{C\omega})^2 > (L\omega)^2 \Rightarrow$ C'est un circuit capacitif

a- $u_c = u_b = u$

Le triangle est équilatéral

$$\frac{1}{C\omega} = 2L\omega_2$$

b- $\varphi_2 = \varphi_i - \varphi_u = \frac{\pi}{6}$

c- $\frac{1}{C\omega_2} = 2L\omega_2$

$$\frac{1}{CL} = 2\omega_2^2 \Rightarrow \omega_0^2 = 2\omega_2^2 \Rightarrow \omega_2^2 = \frac{\omega_0^2}{2} \Rightarrow \omega_2 = \frac{\omega_0}{\sqrt{2}}$$

$$\Rightarrow 2\pi N_2 = \frac{N_0}{\sqrt{2}} \text{ d'ou } N_2 = \frac{N_0}{2\pi\sqrt{2}} = 371Hz$$

$$tg30° = \frac{L\omega I}{rI} = \frac{L\omega}{r} \Rightarrow L = \frac{r}{\omega_2}.tg30° = \frac{r}{2\pi N_2}.tg30°$$

$$= \frac{4}{2\pi.371} = 10^{-3}\ H$$

$L = 10^{-3}$ H

- $\omega_0^2 = \frac{1}{LC} \Rightarrow C = \frac{1}{L\omega_0^2} \Rightarrow C = \frac{1}{10^{-3}.(2\pi.525)^2}$

$C = 91.10^{-6}$ F